

## Right atrial lipoma: the significance of multimodality imaging

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A 67-year-old woman with a history of mild dyspnea and cough was referred for computed tomography (CT) of the chest. The study did not reveal lung pathology, however, a mass in the right atrial wall was discovered. As the CT scan was optimized for a lung scan, the mass was visualized with motion artifacts. She was referred to the hospital for further evaluation. On admission, the patient did not report any symptoms, including the benign ones present before. Physical examination and ECG did not reveal any abnormalities. No arrhythmia was documented.

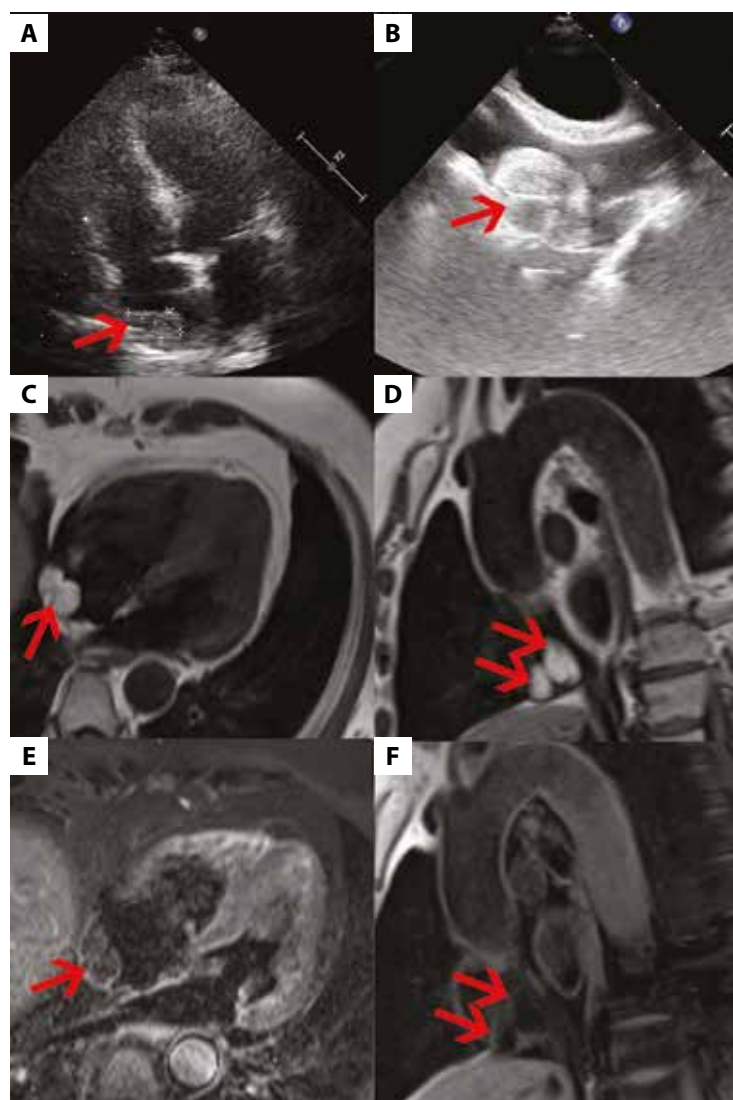
Transthoracic echocardiography revealed a normal left ventricular ejection fraction, mild tricuspid regurgitation without annular dilatation, and mild aortic stenosis. Transthoracic echocardiography confirmed the initial CT findings of an immobile mass with a moderate-to-high echogenicity (size 27 × 15 mm) attached to the right atrial roof (Figure 1A). Transesophageal echocardiography showed a heterogeneous, relatively bright mass (size 30 × 30 mm), with a well-defined border, located in the right atrium between the ostia of the inferior and superior caval veins (Figure 1B). A low-velocity scale color Doppler study did not reveal blood flow in the tumor. A wide peduncle and stable attachment to the atrial wall, as well as a relatively solid echostructure of the mass, indicated a different etiology than myxoma. The high echogenicity and a well-defined border suggested a lipoma or fibroma. However, its polycyclic structure could also have indicated a teratoma, and other tumor types were possible. A multi-chamber cardiac cyst containing a dense material was also considered. The vena

cava inferior lumen was free of any mass, which would be typical of renal cell carcinoma.

Cardiac magnetic resonance imaging showed a solitary, well-circumscribed, irregular and immobile mass (size 30 × 20 × 30 mm), arising from the right atrial wall. T1-weighted and fast spin-echo images revealed a high signal of the tumor in a 4-chamber (Figure 1C) and short-axis view (Figure 1D), which was saturated in T1-weighted and fast spin echo with a fat suppression sequence (Figure 1E). The short-tau inversion recovery sequence revealed a very low signal in the mass (Figure 1F); features which indicated a lipid origin of the mass.

Taking into account the absence of symptoms and the high likelihood of a benign tumor, the Heart Team decided on conservative treatment and periodic clinical observation.

Cardiac lipomas are rare, benign non-myxomatous neoplasms of the heart, typically composed of mature fat cells [1], which account for 8.4% of primary tumors of the heart and pericardium [2]. Most frequently they occur in the right atrium or the left ventricle and they are well-encapsulated, broad-based, immobile tumors. Lipomas should be differentiated with other tumors, particularly myxomas, that are most commonly located in the LA, usually pedunculated, attached to the central part of the interatrial septum in the area of the fossa ovalis [3]. There is no recommendation for surgical treatment, unless they cause arrhythmias, embolization, compression of the coronary arteries, or flow obstruction within the heart [4]. However, cardiac lipomas, unlike myxomas, are more stable and rarely cause pulmonary or peripheral embolization [5].



**Figure 1.** Cardiac lipoma (arrows), visualized using **A.** Transthoracic echocardiography. **B.** Transesophageal echocardiography — bicaval view. **C.** and **D.** Four chamber and short axis T1-weighted fast spin-echo. **E.** Cardiac magnetic resonance including four-chamber short-tau inversion recovery imaging. **F.** Four chamber view T1-weighted with a fat suppression sequence

Our report highlights the importance of a comprehensive tumor evaluation, including echocardiographic assessment of location, shape, echogenicity, presence of microcirculation, and, most importantly, the evaluation of hemodynamic consequences. Tomographic techniques provide an important insight into the tissue composition of the mass. In our case, cardiac magnetic resonance was the most useful, helping to differentiate the tumor, and informing the decision to provide conservative treatment and further follow-up.

### Article information

**Conflict of interest:** None declared.

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